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EXAMINER	
KRAMSKAYA, MARINA	
ART UNIT	**PAPER NUMBER**
2858	

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/767,562	KNAPPE ET AL.	
	Examiner	Art Unit	
	Marina Kramskaya	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1; 3-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **µC, Port A1-A5**. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512.

As per Claim 1, Kawate discloses a circuit arrangement with several inductively operating sensors (Sense Coil 1-4), said circuit arrangement having

- switching means (groups of T3 & T4, FIG. 2, part 1),
- control means (Main Voltage Regulator, FIG. 2, part 2) for said sensors and
- evaluating means (Comparator, FIG. 2, part 1) for signals generated by said sensors as a response to said control means and
- wherein said control means and said evaluating means are electrically connected by said switching means to in each case one said sensor (see combination FIG. 2, parts 1 & 2),
- wherein said switching means comprise MOSFET switches (T3 & T4) with a low drain-source resistance. It is inherent for a MOSFET to have a low drain-source resistance during conduction.

Kawate does not disclose proving precisely on switching means per sensor, wherein the switching means is a single MOSFET with a low drain-source resistance.

Fisher discloses a circuit arrangement wherein precisely one switching means is provided per sensor (**SR_1** for sensing winding **18'** and **SR_2** for sensing winding **20'**), wherein the switching means is a MOSFET (see FIG. 2), with a low drain-source resistance (which is low during conduction).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use precisely one MOSFET switching means per sensor, as taught by Fisher, in order to provide a synchronous rectifier (Fisher: column 2, line 66).

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512, as applied to claim 1 above, and further in view of James, US 6,512,370.

As per Claim 3 and 4, Kawate, as modified, discloses an inductive circuit arrangement as applied to Claim 1, above.

Kawate, as modified, does not disclose circuit arrangement having resonant circuit capacitors, with a single resonant circuit capacitor being a first resonant circuit capacitor and being connectable by a switching means parallel to in each case all said sensors for producing a measuring frequency and a second resonant circuit capacitor parallel to said first resonant circuit capacitor, and switches are provided in order to switch on and off said different resonant circuit capacitors.

James discloses an inductive sensing (inductive sensor **12**) circuit arrangement a first (**C1**) and second (**C2**) resonant capacitors (part of resonant circuit **17**), connected via switching means (**21**) to the sensor and wherein the second capacitor is connected in parallel to the first capacitor (FIG. 5).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a resonant circuit with parallel resonant capacitors, as taught by James, in order to produce resonating frequencies without changing the current levels.

As per Claim 5, Kawate, as modified, discloses the circuit as applied to Claim 4, above.

Kawate does not expressly teach the switching on and off of the resonant circuit capacitors to produce differing measuring frequencies.

James discloses a plurality of measuring frequencies that are produced by the circuit arrangement, wherein switching on and off of said resonant circuit capacitors produces different measuring frequencies (column 6, lines 54-61).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a circuit arrangement wherein switching on and off of said resonant circuit capacitors produces different measuring frequencies, as taught by James, in the sensing circuit of Kawate, in order to utilize the frequency difference to determine the gain.

Kawate, as modified by James, does not expressly teach producing a difference of at least 8% between measuring frequencies.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, to arrive at the difference of at least 8% by routine

experimentation (see MPEP 2144.05), in order to provide for a greater span of frequencies at which measurements may be performed.

5. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512, as applied to claim 1 above, and further in view of Smolenski et al., US 6,350,971.

As per Claim 6, Kawate, as modified, discloses an inductive sensor circuit arrangement as applied to Claim 1, above.

Kawate, as modified, does not disclose an inductive sensor circuit for detection of a pot or saucepan in a cooking zone.

Smolenski discloses an inductive sensor circuit, wherein said sensors are pot or saucepan (vessel **120**) detection sensors (**160** inductive loop) in a cooking zone (column 3, lines 25-34).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an inductive position sensor to detect the presence of a cooking vessel, as taught by Smolenski, in order to detect when a range top needs to be heated.

As per Claim 7, Kawate further discloses the circuit arrangement, wherein the sensor is a wire loop having a few turns (see FIG. 2, part 1, Sense coils 1-4).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512; and Uber, III et al., US 6,353,324.

Kawate discloses a method for operating a circuit arrangement with several inductively operating sensors (Sense Coil 1-4), having

- switching means (groups of T3 & T4),
- control means (Main Voltage Regulator) for said sensors and
- evaluating means (Comparator) for signals, which are generated by said sensors as a response to said control means and
- said control means and evaluating means are electrically connected by said switching means to in each case one said sensor (see combination FIG. 2, parts 1 & 2),
- said switching means being a MOSFET (groups of transistors T3 & T4) with a low drain-source resistance, (It is inherent for a MOSFET to have a low drain-source resistance during conduction),

the method comprising

- evaluating the signals generated by said sensors with said evaluating means.

Kawate does not disclose

Providing a single switching means per sensor, wherein the switching means is a single MOSFET.

readjusting a gate control voltage of the MOSFET so as to give a frequency which is constant with varying temperature.

Fisher discloses a providing precisely one switching means per sensor (SR_1 for sensing winding **18'** and SR_2 for sensing winding **20'**), wherein the switching means is a MOSFET (see FIG. 2), with a low drain-source resistance (which is low during conduction).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use precisely one MOSFET switching means per sensor, as taught by Fisher, in order to provide a synchronous rectifier (Fisher: column 2, line 66).

Uber discloses a method of inductively sensing, wherein a gate control voltage (+Vs) of the MOSFET (169) is readjusted so as to give a frequency which is constant with varying temperature (column 22, lines 46-48).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a MOSFET with gate control voltage, as taught by Uber, in the method of Kawate, as modified by Fisher, in order to provide temperature compensation for the sensing method.

7. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512, and Uber, III et al., US 6,353,324 as applied to claim 8 above, and further in view of James, US 6,512,370.

As per Claim 9, Kawate, as modified, disclose a method of operating a circuit arrangement with several inductively operating sensors as applied to claim 8, above

Kawate, as modified, does not disclose an operation, which takes place with two measuring frequencies.

James discloses a method of inductive sensing, wherein operation takes place with varying measuring frequencies (ABS., lines 2-4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to set the varying frequency, as taught by James, during operation to two measuring frequencies, in the method of Kawate, as modified, in order to indicate the magnitude and polarity of the magnetic field in the inductive sensor.

As per Claim 11, Kawate, as modified, disclose a method of operating a circuit arrangement with several inductively operating sensors as applied to claim 8, above.

Kawate does not disclose a method of inductive sensing, wherein two different capacitors are connected in parallel to one said sensor as resonant circuit capacitors and are operated with different measuring frequencies.

James discloses a method of inductive sensing, wherein two different capacitors are connected in parallel (**C1** and **C2**) and operation takes place with varying measuring frequencies (ABS., lines 2-4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to operate the capacitors with difference measuring frequencies, as taught by James, in the method of Kawate, as modified, in order to indicate the magnitude and polarity of the magnetic field in the inductive sensor.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate, US 6,642,711, in view of Fisher et al., US 5,179,512, and Uber, III et al., US 6,353,324, as applied to claim 8 above, and further in view of Smolenski et al., US 6,350,971.

Kawate, as modified, disclose the method of operating a circuit arrangement with several inductively operating sensors.

Kawate does not disclose a method of inductive sensing, wherein a probability is calculated and it is established whether or not a saucepan is present by averaging over numerous measurements

Smolenski discloses an inductive sensing method (**160** inductive loop), wherein by averaging over numerous measurements a probability is calculated and by means (by processor **170**) thereof it is established whether or not a saucepan (vessel **120**) is present (column 3, lines 25-34).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an inductive position sensor to detect the presence of a cooking vessel, as taught by Smolenski, in the method of Kawate, as modified, in order to detect when a range top needs to be heated.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawate et al., US 6,642,711, in view of Fisher et al., US 5,179,512, and James, US 6,512,370.

As per Claim 12, Kawate discloses a circuit arrangement with several inductively operating sensors (sense coils 1-4), said circuit arrangement comprising:

switching means (T3 and T4);

control means (Main Voltage Regulator) for said sensors; and

evaluating means (Comparator) for signals generated by said sensors as a response to said control means,

wherein said control means and said evaluating means are electrically connected by said switching means to in each case one said sensor (see combination FIG. 2, parts 1 & 2),

wherein said switching means comprise a MOSFET (groups of transistors T3 and T4) with a low drain-source resistance (It is inherent for a MOSFET to have a low drain-source resistance during conduction).

Kawate does not disclose

precisely one switching means per sensor, and

two different capacitors connected in parallel to one said sensor as resonant circuit capacitors and are operable with different measuring frequencies.

Fisher discloses a circuit arrangement wherein precisely one switching means is provided per sensor (**SR_1** for sensing winding **18'** and **SR_2** for sensing winding **20'**), wherein the switching means is a MOSFET (see FIG. 2), with a low drain-source resistance (which is low during conduction).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use precisely one MOSFET switching means per sensor, as taught by Fisher, in order to provide a synchronous rectifier (Fisher: column 2, line 66).

James discloses a method of inductive sensing, wherein two different capacitors are connected in parallel (**C1** and **C2**) and operation takes place with varying measuring frequencies (ABS., lines 2-4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to operate the capacitors with difference measuring frequencies, as taught by James, in the sensor of Kawate, as modified, in order to indicate the magnitude and polarity of the magnetic field in the inductive sensor.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marina Kramskaya whose telephone number is (571)272-2146. The examiner can normally be reached on M-F 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marina Kramskaya
Examiner
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MK

DIANE LEE
SUPERVISORY PATENT EXAMINER